

U.S. FISH AND WILDLIFE SERVICE
SPECIES ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: *Pleomele fernaldii*

COMMON NAME: Hala pepe

LEAD REGION: Region 1

INFORMATION CURRENT AS OF: August 2005

STATUS/ACTION

- ☐ Initial 12-month Petition Finding: ☐ not warranted
☐ warranted
☐ warranted but precluded (also complete (c) and (d) in section on petitioned candidate species- why action is precluded)
- ☐ Species assessment - determined species did not meet the definition of endangered or threatened under the Act and, therefore, was not elevated to Candidate status
- ☐ New candidate
- ☒ Continuing candidate
- ☒ Non-petitioned
- ☐ Petitioned - Date petition received: May 11, 2004
- ☐ 90-day positive - FR date: _____
- ☒ 12-month warranted but precluded - FR date: May 11, 2005
- ☒ NA Did the petition requesting a reclassification of a listed species?

FOR PETITIONED CANDIDATE SPECIES:

- a. Is listing warranted (if yes, see summary of threats below)?
- b. To date, has publication of a proposal to list been precluded by other higher priority listing actions?
- c. If the answer to a. and b. is "yes", provide an explanation of why the action is precluded.
- ☐ Listing priority change
- Former LP: _____
- New LP: _____
- Date when the species first became a Candidate (as currently defined): 2001
- ☐ Candidate removal: Former LP: _____
- ☐ A – Taxon is more abundant or widespread than previously believed or not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.
- ☐ U – Taxon not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status due, in part or totally, to conservation efforts that remove or reduce the threats to the species.
- ☐ F – Range is no longer a U.S. territory.
- ☐ I – Insufficient information exists on biological vulnerability and threats to support listing.

- ___ M – Taxon mistakenly included in past notice of review.
___ N – Taxon does not meet the Act’s definition of “species.”
___ X – Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Flowering plants, Ruscaceae

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Hawaii, island of Lanai

CURRENT STATES/ COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE: Hawaii, island of Lanai

LAND OWNERSHIP: All of the island of Lanai is owned by one private landowner.

LEAD REGION CONTACT: Paul Phifer, 503-872-2823, paul_phifer@fws.gov

LEAD FIELD OFFICE CONTACT: Pacific Islands Fish and Wildlife Office, Christa Russell, 808-792-9400, christa_russell@fws.gov

BIOLOGICAL INFORMATION:

Species Description *Pleomele fernaldii* is a tree 6 to 8 meters (19.7 to 26.2 feet) tall, with leaves borne at the tips of the few branches. Leaves are long and strap-like, and leave conspicuous leaf scars when they fall off. The yellowish-green, short, tubular flowers are borne in large clusters. Berries are bright red. This species differs from others in this genus in Hawaii by having shorter flowers (Wagner *et al.* 1999a).

Taxonomy *Pleomele fernaldii* was first described by Harold St. John in 1947 (Wagner *et al.* 1999a). Otto Degener mistakenly named the species *Pleomele lanaiensis*, but did not officially publish the name (Degener and Degener 1971). Wagner *et al.* (1999a) considered *P. lanaiensis* a synonym of *P. fernaldii*. In the 2003 supplement to the *Manual of the Flowering Plants of Hawaii*, the most recently accepted Hawaiian plant taxonomy, this genus has been moved from the Agavaceae to the Ruscaceae family and maintained as a valid species (Wagner and Herbst 2003).

Habitat Typical habitat is remnant patches of dry forest (Robert Hobdy, Hawaii Division of Forestry and Wildlife, pers. comms. 1995 and 1999).

Historical and Current Range/Current Status Historically, this species was found throughout the dry forest of Lanai, which has become dramatically reduced due to agriculture and habitat degradation (R. Hobdy, pers. comms. 1995 and 1999). This species is currently found on the island of Lanai in the few remnant dry forests on the leeward side of the island in three populations totaling 200 individuals (R. Hobdy, pers. comms. 1995 and 1999).

THREATS:

A. The present or threatened destruction, modification, or curtailment of its habitat or range.

This species is threatened by axis deer (*Axis axis*) that adversely modify habitat (R. Hobdy, pers. comm. 1995). Originally released on the island of Molokai in 1868, axis deer can now be found in extensive populations on the islands of Maui, Molokai and Lanai. Deer eat native vegetation, trample roots and seedlings, cause erosion, and promote the invasion of alien plants (Tomich 1986; Cuddihy and Stone 1990). No known conservation measures have been implemented to date to address this threat.

B. Overutilization for commercial, recreational, scientific, or educational purposes.

None known

C. Disease or predation.

None known.

D. The inadequacy of existing regulatory mechanisms.

Deer are managed as a game animal in Hawaii. Deer hunting is allowed on all islands either year-round or during certain months, depending on the area (Hawaii Department of Land and Natural Resources n.d.-a, n.d.-b, n.d.-c). However, public hunting does not adequately control the number of ungulates to eliminate this threat to native plant species. No other known conservation measures have been taken to date to address this threat.

E. Other natural or manmade factors affecting its continued existence.

This species is threatened by alien plant species that adversely modify habitat (R. Hobdy, pers. comm. 1995).

The original native flora of Hawaii consisted of about 1,400 species, nearly 90 percent of which were endemic. Of the total native and naturalized Hawaiian flora of 1,817 taxa, 47 percent were introduced from other parts of the world, and nearly 100 species have become pests (Smith 1985; Wagner *et al.* 1999a). Several studies (Cuddihy and Stone 1990; Wood and Perlman 1997; Robichaux *et al.* 1998) indicate nonnative plant species may outcompete native plants similar to *Pleomele fernaldii*. Competition may be for space, light, water, or nutrients, or there may be a chemical inhibition of other plants (Smith 1985; Cuddihy and Stone 1990). In addition, nonnative pest plants found in habitat similar to that of this species have been shown to make the habitat less suitable for native species (Smathers and Gardner 1978; Smith 1985; Loope and Medeiros 1992; Medeiros *et al.* 1992; Ellshoff *et al.* 1995; Meyer and Florence 1996; Medeiros *et al.* 1997; Loope *et al.* 2004). In particular, alien pest plant species modify habitat by modifying availability of light, altering soil-water regimes, modifying nutrient cycling, or altering fire characteristics of native plant communities (Smith 1985; Cuddihy and Stone 1990; Vitousek *et al.* 1987). Because of demonstrated habitat modification and resource competition by nonnative plant species in habitat similar to habitat of *Pleomele fernaldii*, the Service believes nonnative plant species are a threat to *Pleomele fernaldii*. The remaining unmanaged populations of *Pleomele fernaldii* are still impacted by this threat.

CONSERVATION MEASURES PLANNED OR IMPLEMENTED

None known.

SUMMARY OF THREATS

The major threats to this taxon are axis deer and nonnative plant species, which are believed to be a major cause of the decline of this species throughout its range. No known conservation measures have been implemented to date to address these threats.

LISTING PRIORITY

THREAT			
Magnitude	Immediacy	Taxonomy	Priority
High	Imminent	Monotypic genus	1
		Species	2*
	Non-imminent	Subspecies/population	3
		Monotypic genus	4
		Species	5
Moderate to Low	Imminent	Subspecies/population	6
		Monotypic genus	7
		Species	8
	Non-imminent	Subspecies/population	9
		Monotypic genus	10
		Species	11
		Subspecies/population	12

Rationale for listing priority number:

Magnitude:

This species is highly threatened by axis deer that degrade and destroy habitat, and nonnative plants that compete for light and nutrients. Threats to the dry forest habitat of *Pleomele fernaldii* occur throughout its range and are expected to continue or increase without their control or eradication. No known conservation measures have been implemented to date to address these threats.

Imminence:

Threats to *Pleomele fernaldii* from axis deer and nonnative plants are considered imminent because they are ongoing.

Yes Have you promptly reviewed all of the information received regarding the species for the purpose of determining whether emergency listing is needed?

Is Emergency Listing Warranted? No. The species does not appear to be appropriate for emergency listing at this time because the immediacy of the threats is not so great as to imperil a significant proportion of the taxon within the time frame of the routine listing process. If it becomes apparent that the routine listing process is not sufficient to prevent large losses that may result in this species' extinction, then the emergency rule process for this species will be

initiated. We will continue to monitor the status of *P. fernaldii* as new information becomes available. This review will determine if a change in status is warranted, including the need to make prompt use of emergency listing procedures.

DESCRIPTION OF MONITORING:

The information in this form is based on the results of a meeting of 20 botanical experts held by the Center for Plant Conservation in December of 1995, and was updated by personal communication with Robert Hobdy of Hawaii's Division of Forestry and Wildlife. We have incorporated additional information on this species from our files and the most recent supplement to the *Manual of the Flowering Plants of Hawaii* (Wagner and Herbst 2003). In 2004 the Pacific Islands office contacted the following species experts: Bob Hobdy, retired from Hawaii Division of Forestry and Wildlife; Joel Lau, Hawaii Natural Heritage Program; Art Medeiros, U.S.G.S. Biological Resources Discipline; Hank Oppenheimer, resource manager for Maui Land and Pineapple Company; and Steve Perlman and Ken Wood, National Tropical Botanical Garden. No new information was provided in 2004. In 2005 we contacted the species experts listed below, but received no new information on this taxon.

The Hawaii Natural Heritage Program identified this species as critically imperiled (Hawaii Natural Heritage Program Database 2004). Based on the International Union for Conservation of Nature and Natural Resources Red Plant Data Book rarity categories, this species is recognized as Endangered (at risk of becoming extinct) (Wagner *et al.* 1999b).

Species experts were contacted but did not provide new information this year, no new literature was found, and no known entities are studying this species. However, it is highly likely that the previously reported threats continue to impact the species at the same or an increased level.

COORDINATION WITH STATES

In October 2004 we provided the Hawaii Division of Forestry and Wildlife with copies of our most recent candidate assessments for their review and comment. Vickie Caraway, the State botanist, reviewed the information for this species and provided no additional information or corrections (V. Caraway, pers. comm. 2005).

LITERATURE CITED

List all experts contacted:

Name	Date	Place of Employment
1. Joel Lau	June 28, 2005	Hawaii Natural Heritage Program
2. Art Medeiros	June 28, 2005	U.S.G.S. Biological Resources Discipline
3. Jim Jacobi	June 28, 2005	U.S.G.S. Biological Resources Discipline
4. Rick Warshauer	June 28, 2005	U.S.G.S. Biological Resources Discipline
5. Hank Oppenheimer	June 28, 2005	Maui Land and Pineapple Company
6. Kapua Kawelo	June 28, 2005	U.S. Army
7. Dave Lorence	June 28, 2005	National Tropical Botanical Garden
8. Steve Perlman	June 28, 2005	National Tropical Botanical Garden
9. Ken Wood	June 28, 2005	National Tropical Botanical Garden
10. Marie Brueggemann	July 13, 2005	U.S. Fish and Wildlife Service

List all databases searched:

Name	Date
1. Hawaii Natural Heritage Program	2004

Other resources utilized:

- Center for Biological Diversity, Dr. Jane Goodall, Dr. E.O. Wilson, Dr. Paul Ehrlich, Dr. John Terborgh, Dr. Niles Eldridge, Dr. Thomas Eisner, Dr. Robert Hass, Barbara Kingsolver, Charles Bowden, Martin Sheen, the Xerces Society, and the Biodiversity Conservation Alliance. 2004. Hawaiian Plants: petitions to list as federally endangered species. May 4, 2004.
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- Smathers, G.A. and D.E. Gardner. 1978. Stand analysis of an invading firetree (*Myrica faya* Aiton) population, Hawai'i. Proceeding of the Second Conference on Natural Science, Hawaii Volcanoes National Park, pp. 274-288.
- Smith, C.W. 1985. Impact of alien plants on Hawai'i's native biota: in Stone, C.P., and J.M. Scott (eds.), Hawai'i's terrestrial ecosystems: preservation and management. Coop. Natl. Park Resources Stud. Unit, Univ. Hawaii, Honolulu, pp. 180-250.

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- Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1999a. Manual of the Flowering Plants of Hawai'i, Bishop Mus. Spec. Publ. 97:1-1918. University of Hawaii Press and Bishop Museum Press, Honolulu.
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- Wood, K.R. and S. Perlman. 1997. Maui 14 plant survey final report. Submitted by National Tropical Botanical Garden, October, 1997.

APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes to the candidate list, including listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all 12-month petition findings, additions of species to the candidate list, removal of candidate species, and listing priority changes.

Approve: **Acting** David Winkler 11/18/05
Regional Director, Fish and Wildlife Service Date

Concur: _____
Director, Fish and Wildlife Service Date

Do not concur: _____
Director, Fish and Wildlife Service Date

Director's Remarks:

Date of annual review: September 20, 2005

Conducted by: Marie M. Bruegmann, Pacific Islands FWO
Plant Recovery Coordinator

Comments:
PIFWO Review

Reviewed by: Christa Russell Date: September 27, 2005
Plant Conservation Program Leader

Gina Shultz Date: October 14, 2005
Assistant Field Supervisor,
Endangered Species

Patrick Leonard Date: October 14, 2005
Field Supervisor